Abstract of the Disclosure

Multifocal optical device designs receive input parameters to specify a desired power distribution function, a power deviation weight function, and an astigmatism weight function over the design field. A fourth-order partial differential variational equation is linearized by defining the optical surface in terms of perturbations from a base surface such as a sphere or a toric. The solution may be expressed as piecewise quadratic splines superposed over a triangulation of the field. Evaluation of the surface may use a set of tensor-product splines. An astigmatic base surface permits both multiple magnifying powers and a prescribed astigmatism correction in a single optical surface.